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eter, much like the hollow which is filled with the pith of the horn of the ox: This is only ſix inches deep. Every other part is, or appears to have been ſolid. The exteriour part, where entire or not periſhed, is ſmooth; and in one ſpot of a dark colour. The interiour parts are of a clear white, and have the reſemblance of well burnt, unſlacked lime ſtone; but theſe can be ſeen only where it is periſhed, tender, and broken. From one end to the other, it appears to have been nearly round; and on it there have been no prongs or branches. It is incurvated nearly into an arch of a large circle. By the preſent ſtate of both the ends, much of it muſt have periſhed; probably two or three feet from each end. From a general view of it, there is reaſon to believe, that in its natural ſtate, it was nearly a ſemicircle of ten or twelve feet. The undecayed parts, particularly the outſide, ſend forth a ſtench, like a burning horn or bone. Of what animal this is the horn or bone, and what has become of this animal, are queſtions worthy of the curious and learned."

XXIV. *Obſervations on the Manufacture of Pot Aſh.* By AARON DEXTER, M. D. F. A. A.

HAVING had frequent applications from the manufacturers of pot aſh, to examine that article, when condemned by the aſſay maſters, I have been led to ſeveral obſervations, which are generally the reſult of experiments, reſpecting its defects, and the cauſes of its impurity. From a conviction that thoſe defects may be eaſily remedied, I have committed my remarks to paper, with a conciſe hiſtory of the manufacturing of this ſalt, which I beg leave to ſubmit to the conſideration of the American Academy of Arts and Sciences. And if after their critical examination, they ſhall be thought to contain any uſeful hints, they will diſpoſe of them as they think proper.

It is unneceſſary to premiſe, that the great evil which injures the ſale, and very much reduces the value of ſome of the American pot aſh, ariſes from foreign matters, ſuch as common ſalt and earth, being accidentally mixed with it.

The furnaces, and machines, or apparatus, commonly uſed in this country for extracting the ſalts from the aſhes, and for boiling and fluxing them, are undoubtedly of a good kind.

The firſt important object to be obſerved, is to extract all the ſalts from the aſhes. For this purpoſe, rain or river water ought always to be preferred. The aſhes ſhould be ſaturated, and remain with about an inch of water over the top of them twelve hours at leaſt. Then a ſmall opening may be made in the bottom of the leach tub, which ought to contain a ſtrainer, in order to prevent the aſhes from running off; or a falſe bottom may be uſed to advantage. The lie diſcharged is fit for immediate uſe. As ſoon as the manufacturer begins to draw it off, he muſt apply freſh water; and continue that application, and boiling the lies, until they are ſo reduced in ſtrength, as that they will no longer pay the expenſe of boiling. The aſhes are however, ſtill

ſtill to be preſerved; and freſh water applied as before. And, when drawn off, they may be uſed with profit on freſh aſhes, as long as there remain in the lies any ſalts, which may be diſcovered by the taſte.

The lie that runs off for uſe, ſhould be filtered as it paſſes the bottom of the tub; and alſo as it runs into the receiver; which proceſs may be performed without any expenſe or inconvenience. Previous to boiling the lie, it ought to ſtand twenty four hours; and then be drawn into the kettles with great care, ſo as to leave all the ſediment behind. Every precaution ſhould be taken to let nothing fall into the lies previous to, and whilſt boiling. Therefore, that injurious practice of laying wood on the kettles for drying, muſt be avoided.

Strong lies may always be boiled half away in the firſt operation, and others much more: after which they muſt be taken with care out of the kettles, and put into a receiver at hand. Being ſo ſhifted, a very ſmall quantity of unſlacked lime may be put into it, which ſerves to clarify, and at the ſame time, renders the lie more pungent to the taſte. Or, a quantity of lime may be mixed with the aſhes, which will anſwer the laſt purpoſe.

After ſtanding quiet until it cools to the ſtate of blood heat, it muſt be again ſhifted; and in drawing off the lie in every inſtance, the utmoſt care muſt be taken that all the ſediment, which is generally a chalky earth, is detained; which proceſs will effectually ſeparate all the common ſalt:

for

for that will congeal and cryſtalize with hot water in the ſame quantity as with cold water; which is not the caſe with any other neutral ſalt or alkali. If after all, from any circumſtance unforeſeen, the lies ſhall not appear pure and clean, after taken from the laſt ſediment, they muſt ſtand quiet until another is formed; or until it appears, that no other will form. Should one form, it muſt be ſeparated as before, prior to its being put into the kettles for the laſt operation. Without theſe precautions, the pot aſh, in conſequence of neutral ſalts, and a chalky matter which are obtained from the aſhes, will be hard to flux; and require a long time to effect it; which will greatly endanger the kettles; and after it is fluxed, will be very impure; and ſell for a reduced price, if the owner be fortunate enough to find a market at any rate.

The pot aſhes which I have examined, that have been condemned by the aſſay maſters, I have found to contain principally common earth; which is undoubtedly the chief ſource of impurity in the pot aſh of this country. If any cryſtals of common ſalt or nitre appear in the ſediment, they may be preſerved and purified by an eaſy proceſs, which is known to people in general, who have attended to the manufacturing of ſaltpetre.

After the lie is properly cleared from earthy matter, and common ſalt, which not only retards the fluxing proceſs, as has been obſerved, but renders it unfit for many uſes, particularly the bleaching of linens; it muſt continue boiling until evaporation ſhall ceaſe. Then the fire muſt be increaſed, until the ſalts are perfectly fluxed, for the purpoſe of deſtroying the inflammable ſubſtance, with which moſt of them abound; which may be determined by the following ſimple method. Take ſome pot aſh and diſſolve it in water. Let there be as much pot aſh as the water will diſſolve. Then plunge a piece of ſilver coin, or any thin plate of ſilver into the ſolution. If the pot aſh contain any inflammable matter, it will change the ſilver to a dark or black colour, in the ſame manner as if it had been over the ſteam of burning ſulphur. By this eaſy experiment, the manufacturer will be ſaved the expenſe and mortification of carrying pot aſh to market, which muſt ſell for a very reduced price. Should the workman diſcover, on the experiment being made, the inflammable principle, or what is called by the workmen, the oily ſubſtance, or fire, to exiſt in the pot aſh, it can be remedied only by diſſolving it in pure water, and boiling it down and fluxing it a ſecond time. Or, it may be made into pearl aſhes, by calcination, with little expenſe.

Some manufacturers may be diſcouraged from going through this proceſs, by the labour neceſſary in ſhifting the lie ſo often. But if they conſider the advantages they will obtain in fluxing their pot aſh, which will be effected in leſs than half the time required in the uſual way, and the great ſaving in the expenſe of kettles, by the lies being made clean and pure, they will be reconciled to the method, notwithſtanding the trouble; as their intereſt will be found, on experiment, to be concerned in its adoption; and as their pot aſh will find a more ſpeedy market; and obtain a higher price. Beſides, the manufacturer, and the merchant will never be doubtful of their adventures. And the reputation of American pot aſh will be equal, if not ſuperiour to any that is manufactured in Europe.

The ſubject of pot aſh making has frequently been before the legiſlature, and applications made for premiums, by people, who have no doubt acquired uſeful knowledge in the buſineſs. This circumſtance, and a wiſh to render ſervice to the publick, are the only motives which have induced me to commit theſe obſervations to the Academy. I have endeavoured to avoid prolixity, and all chemical terms, as I wiſh to be underſtood by people concerned in this branch of buſineſs; all of whom may not have had the means of obtaining a perfect knowledge of them.

XXV. *Second Eſſai ſur des Eaux de Boſton. Par M.* FERON.

LORSQUE j'ai eu l'honneur de communiquer à l' Académie mon eſſai ſur les eaux de Boſton, j'ai dit n'avoir découvert aucune ſubſtance métallique. Depuis ce tems, on m'a communiqué, que certaines eaux de Boſton avoient des qualités particulieres, telque de jaunir, noircir, et avoir mauvais gout, &c. Celles que je connois juſqu'à preſent, ſont, celle de M. *William Greenleaf*, à coté de ſon magaſin, dans

XXV. *Second Eſſay on the Boſton Pump Waters. By* M. FERON.

WHEN I had the honour of communicating to the Academy my eſſay on the waters of Boſton, I obſerved, that I had not diſcovered any metallick impregnation. Since that time, I have been informed, that ſome of the ſprings in that town had certain particular qualities, ſuch as of ſtaining yellow and black, and that they had an unpleaſant taſte. Thoſe I refer to now, are Mr. Greenleaf's well, near his ſtore, in the